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THE RANGE AND EXTINCTION OF *DIPROTODON MINOR* HUXLEY

By Edmund D. Gill, B.A., B.D.

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Interesting and varied though the present marsupial fauna of Australia is, the Pleistocene fauna was even more so, for many whole genera have become extinct since then. Among these genera is *Diprotodon,* one species of which (*optatum*) was the largest marsupial that ever lived. Four species have been listed by Simpson (1930) in his catalogue, viz.:

Diprotodon optatum (= *D. australis*) Owen 1838
D. longiceps McCoy 1865
D. bennettii Owen 1877
D. minor Huxley 1862

The last-named is a comparatively diminutive form, and little is known about it. The species was originally described from some teeth found at Gowrie on the Darling Downs in Queensland (Huxley 1862). De Vis (1888) extended our knowledge by describing some teeth from King's Creek on the Darling Downs. Stirling and Zietz (1900) recorded remains of a small *Diprotodon* from Lake Callabonna in South Australia which they "referred provisionally and inclined to think definitely" to *D. minor.* Dennant and Kitson (1903) included it as such in their faunal lists. In more recent years, Longman (1924) has described a mandible of *D. minor* from the Darling Downs, and indicated mandibular differences between this species and the huge *D. optatum.* In 1929 Longman reported receipt at the Queensland Museum of a mandibular fragment from Murgon, thus extending the range of *D. minor* further north.

Victorian Occurrence

From under basaltic tuff at Blind Creek near Camperdown in Western Victoria, Grayson and Mahony (1910) recorded vertebrate fossils. This material is now in the National Museum of Victoria. It was collected by Mahony and includes *Diprotodon minor* and a giant kangaroo. The *Diprotodon* species is represented by the upper incisor tooth (P 16155) shown in Fig. 1. That the tooth is that of a mature animal and not a juvenile is shown by its degree of wear. Its measurements are:

Length	in straight line	7·8 cm.
	following curvature	8·8 cm.
Width	at posterior limit of area of wear	2·4 cm.
	at root end of tooth as preserved	2·9 cm.
Thickness	at posterior limit of area of wear	1·4 cm.
	at root end of tooth as preserved	1·7 cm.

Pulp Cavity as seen at root end of tooth as preserved is lenticular in cross-section and measures 1·4 cm. by 0·4 cm.

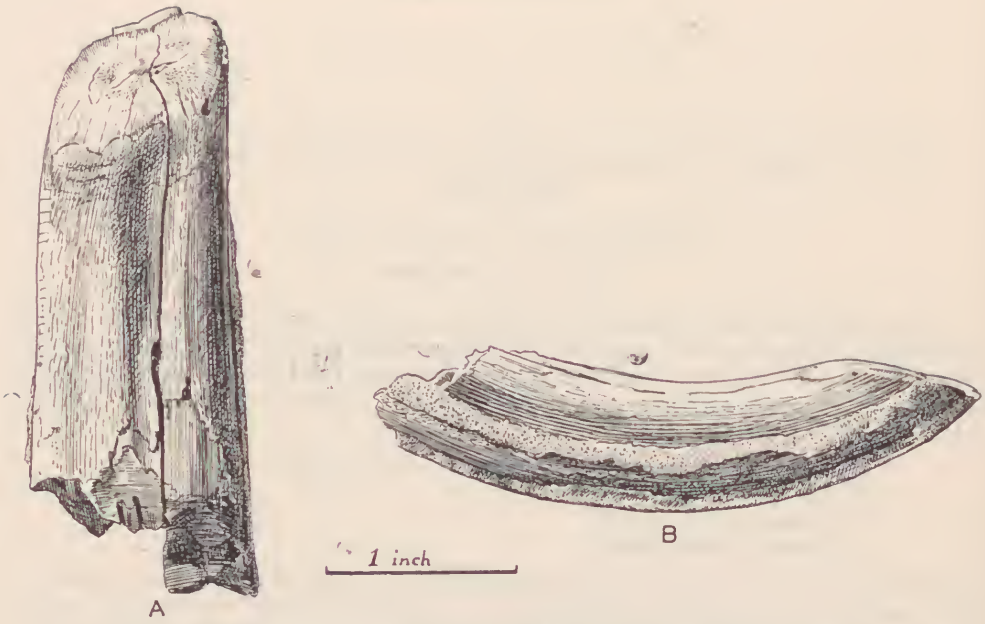

FIG. 1.—*Diprotodon minor* Huxley from Blind Creek, Western Victoria.
A. Back or lingual surface of upper incisor, showing area of wear.
B. Side view of same.
Drawing by G. Browning.

The tooth has the typical flattish cross-section of a *Diprotodon* upper incisor. Along both the front and back of the tooth is a shallow yet well-defined groove. The enamel on the front surface has what Krefft (1873) has aptly called a "worm-eaten appearance". It might be suspected that bones of a smaller *Diprotodon* could be confused with those of *Nototherium*, but in the case of the first pair of upper incisors those of *Diprotodon* are readily distinguished from those of *Nototherium* because the former are chisel-like while the latter are conical. This is the first time that the upper incisor of *D. minor* has been described.

New South Wales Occurrences

The finding of *Diprotodon minor* in Victoria as well as in Queensland presumed that this animal lived also in the intervening area of New South Wales. Through the kind co-operation of Dr. A. B. Walkom, Director, and Mr. H. O. Fletcher, Curator of Fossils, of the Australian Museum, Sydney, I was able to compare the Victorian incisor with material in that institution, where it was noted that *D. minor* is present in collections from N.S.W. localities. Dr. Walkom has now provided me with the following list of N.S.W. occurrences of *Diprotodon minor*:

Wellington Caves.
Weetalibah Creek, near Coolah.
Gunnedah.
Gilgoin Station, near Brewarrina.

Cobar.
Downside, near Wagga.
Greenbank, near Wandsworth.

The known localities of *D. minor* are plotted in Fig. 2, which shows that the species has only lived (as far as is known) in south-east Australia. The species could well have evolved in the N.S.W. area and then radiated to contiguous areas. When our Pleistocene deposits have been subdivided and dated, it will be possible to trace the dispersal centre by its antiquity. Of the sites from which *D. minor* is known, the only one dated is the Victorian one, which is of the order of 12,000 years old (Gill 1953a).

Fig. 2.—Localities where *Diprotodon minor* has been found in Australia.

Problem of Extinction

Many reasons have been advanced for the extinction of Pleistocene marsupials. One is that they became too specialized in size. Thus *Diprotodon optatum*, the biggest marsupial that ever lived, is envisaged as becoming too large a mass of protein to be economically supported. However, the comparatively small *D. minor* suffered the same fate at about the same time.

Another reason given is that the Pleistocene animals were adapted for heat conservation in order to survive the rigors of the Ice Age. However, half of the Ice Age consisted of interglacial periods warmer than the present. Also, some of these animals date back to the Tertiary when the climate was more or less tropical. The nototheres, close relatives of *Diprotodon*, date back to the Tertiary (Gill 1953b).

Yet another explanation of extinction is that the mid-Holocene Arid Period wiped them out, but, as already mentioned, there were longer periods of warm climate during the Pleistocene, namely, the Interglacials. Moreover, these animals had the power to migrate and could move with the moving climatic belts.

The coming of the dingo is the key to the problem, some aver, yet giant marsupials died out in Tasmania where there was no dingo. The aborigine gets a share of the blame, but although he must have exercised some control on the numbers of these animals, he could not be the sole cause of their extinction. Some forms became extinct before the aborigines reached Australia. Indeed, the problem of the extinction of *Diprotodon minor* and other numerous Australian marsupials is a problem not yet solved.

References

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